SMD Operations Procedures Manual

8.1.3.1 OPERATION OF THE MYCOM COMPRESSOR FOR MAGCOOL REFRIGERATOR

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Hand Processed Changes

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8.1.3.1 Operation of the MYCOM Compressor for MAGCOOL Refrigerator

1.0 Purpose

This procedure provides instruction for startup, operation and shutdown of the two stage MYCOM screw compressor which supplies 160 gram/second of helium flow at 265 psia to MAGCOOL helium refrigerator for testing superconducting magnets.

2.0 Responsibilities and Scope

2.1 The operator is responsible for startup, operation and shutdown of the compressor.

3.0 Prerequisites

3.1 Operator must be trained by the supervisor or an authorized operator.

3.2 Training shall include operation of the helium refrigerator and the MAGCOOL Test and Measure System.

4.0 Precautions

4.1 Hearing protection shall be worn in the compressor room.

4.2 Ensure that no personnel are near unit to be started unless they are issued hearing protection and aware of compressor room environment.

5.0 Procedure

5.1 Ensure that water supply and return **VALVES** to oil cooler and aftercooler are **OPEN**. Check the water pressure on PI-10. **NOMINAL PRESSURE** for water to heat exchangers is **65 psig**.

5.2 Check that the **oil level** in the sight glass of the oil tank is **correct.**

5.3 Ensure that compressor suction and discharge **VALVES** are **OPEN** and the manual by-pass **valve V-100** is **closed.**

5.4 Turn on lube oil pump switch.

5.5 Unload both C1 and C2 manually until the "**SYSTEM READY**" light is on.

5.6 Push the "**SYSTEM RESET**" button and then the "**START**" button. The compressor drive motors will start and the system will begin to operate. Enter that compressor is started in the Compressor Operator's Logbook.

5.7 Load C1 and C2 half way during cooldown of the helium refrigerator.

5.8 When the pressure bypass valve is almost closed, fully load C2 switch PIC-2 from manual to **AUTO** and set pointer on **PIC-2 to 50% MAX**.

5.9 Check pressure, temperature and oil level to make sure the **compressor** is operating in its design range.

5.10 Any sign of oil loss in addition to being logged shall be reported to the supervisor or engineer for investigation.

5.11 **Automatic shutdown** of the system occurs if any of the following system switches are activated:

A. Low oil differential pressure in first stage C1 or second stage C2, trip value is set at 45 psid.

B. High discharge temperature in C2, trip value is set at 250 F

C. High oil temperature, trip value is set at 120 F.

D. High discharge pressure in C1 or C2, trip value are set at 100 psig and 275 psig for C1 and C2.

E. Low suction pressure, trip value is set at 0.1 psig.

F. Low oil temperature, trip value is set at 70F.

G. High oil level in second stage reservoir.

H. High process gas temperature, trip value is set at F.

I. Oil failure timer is set at 20 seconds.

5.12 The compressor can be shutdown manually in case the controller fails to shutdown the unit during any of the above events, or in case of emergency situations due to loss of helium, oil or water.

5.13 Normal shutdown or manual emergency shutdown of the system is accomplished by depressing the local "STOP" push-button. Enter that compressor is stopped in Compressor Operator's Logbook.

6.0 Documentation

Documentation shall be kept in Compressor Operator's Logbook in 902.

7.0 References

Installation, Operation and Maintenance manual - Helium Compressor System for Bookhaven National Lab. PG639 by Mycom. A copy of this manual is kept in MAGCOOL area located in Bldg. 902.

8.0 Attachments

None